The leader in acoustics and vibration…

INVESTIGATIVE SCIENCE AND ENGINEERING, INC.
Scientific, Environmental, and Forensic Consultants

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September 6, 2006 (Revised)

Mr. Joseph Law
1405 Monument Hill Road
El Cajon, CA 92020

RE: ACOUSTICAL SITE ASSESSMENT
BRAYTON WAY/LAW TPM 20991; ER 06-14-002 – SAN DIEGO, CA
ISE REPORT #06-025

Dear Mr. Law:

At your request, Investigative Science and Engineering (ISE) have performed an acoustical site assessment of the proposed TPM 20991 residential development located in the County of San Diego, California. The results of the survey as well as predicted future noise levels at the project site are presented in this letter report.

INTRODUCTION AND DEFINITIONS

Existing Site Characterization

The proposed site for the Brayton Way/Law TPM 20991 residential development consists of approximately 3.49 acres. The project site is located north of Chase Avenue and east of Brayton Way. Jamacha Road and Chase Avenue provide regional access to the project area from I-8 to the north. A regional map of the proposed project site can be seen in Figure 1 on the following page. A map of the project area and surrounding community is shown below in Figure 2 on Page 3 of this report.

The proposed project is currently zoned RR2 (Rural Residential) and does not propose any land use changes. The proposed development area currently resides as mostly disturbed land with a northeasterly sloped topography from approximately 585 feet above mean sea level (MSL) at the southwestern corner to approximately 550 feet MSL at the northeastern boundary.

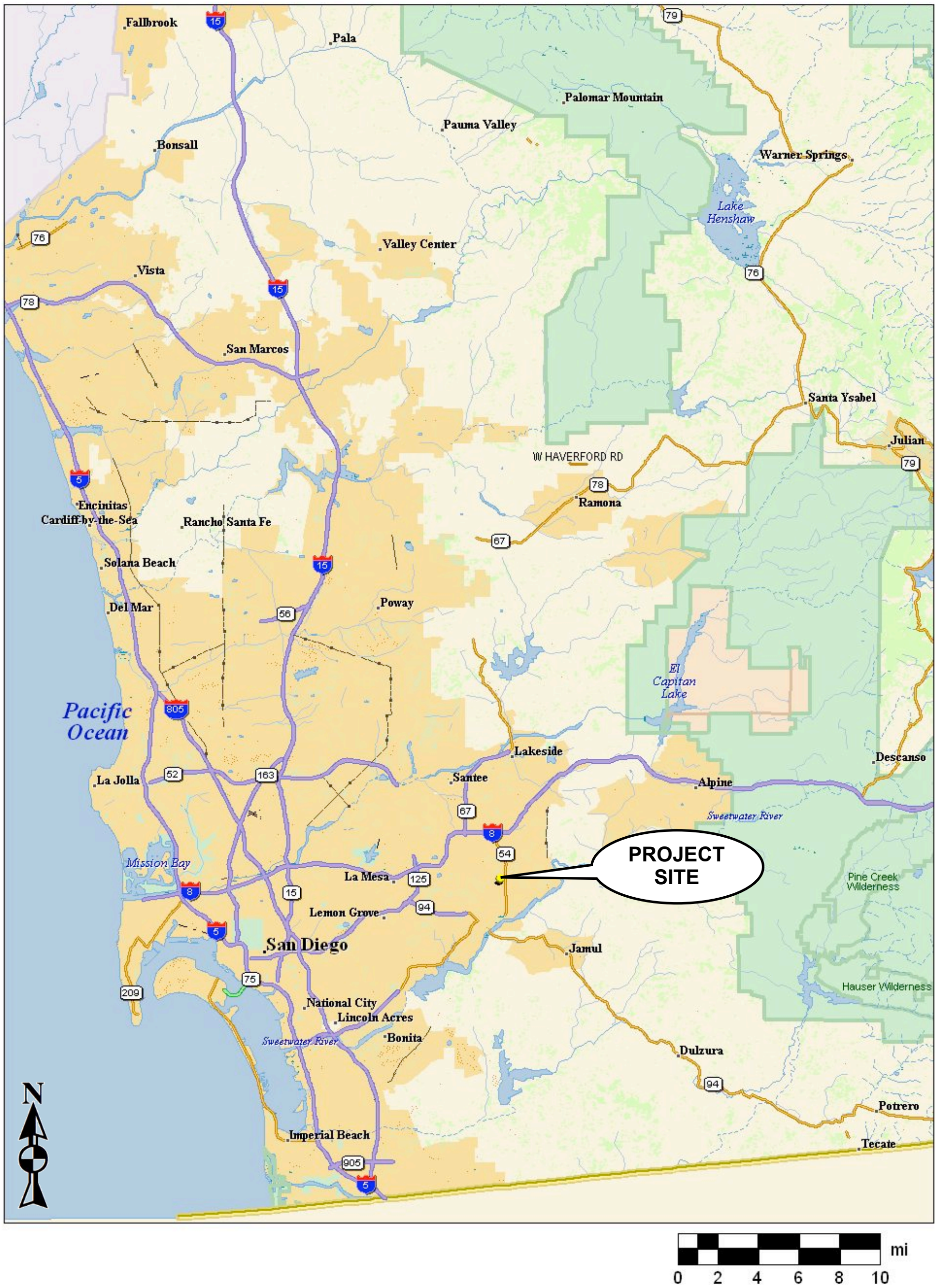

FIGURE 1: Project Regional Map – TPM 20991 Brayton Way/Law Development (ISE, 3/06)

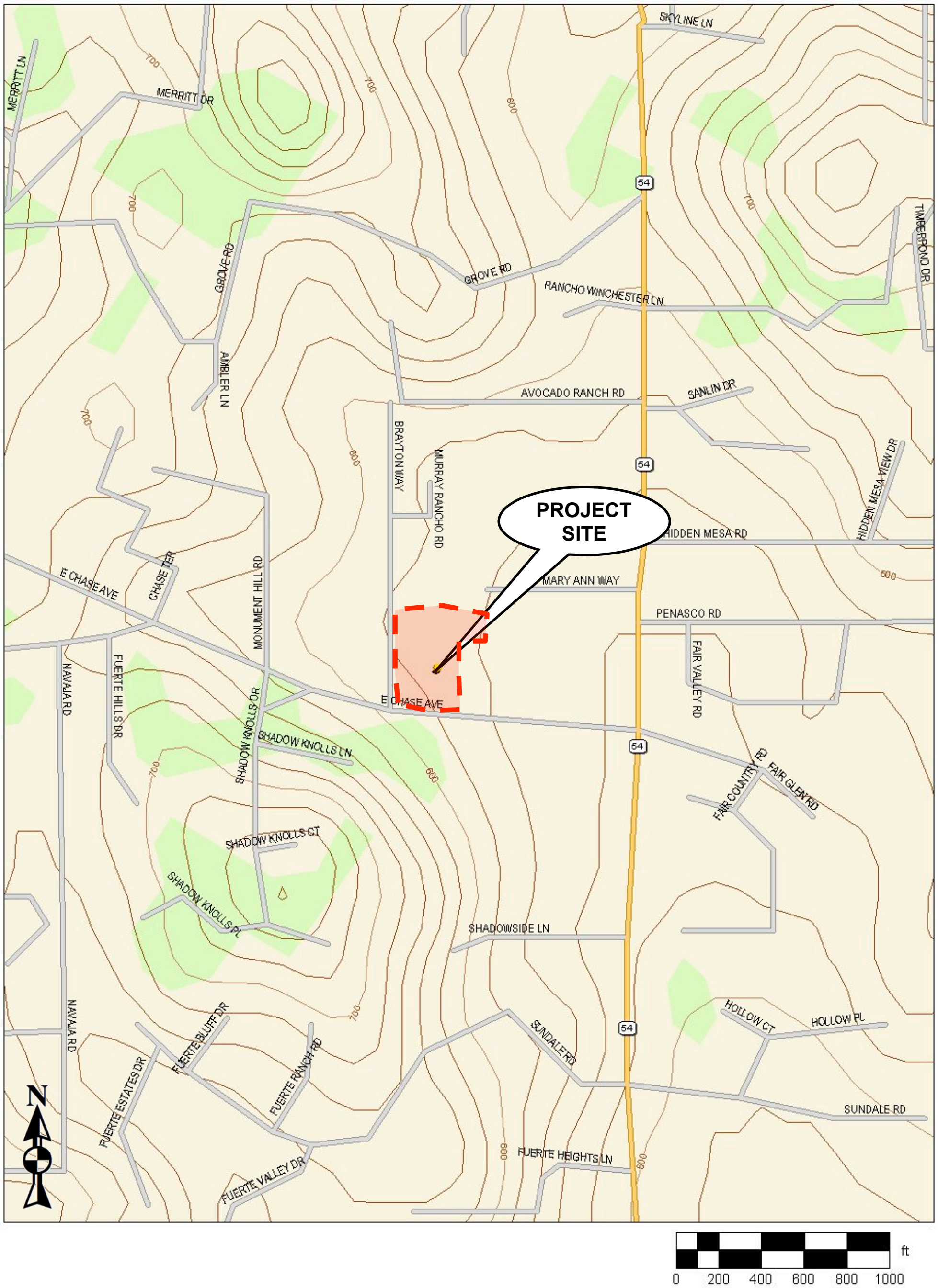

FIGURE 2: Project Vicinity Map – TPM 20991 Brayton Way/Law Development (ISE, 3/06)

Project Description

The proposed project is a minor residential subdivision within the County of San Diego. The development plan calls for the subdivision of 3.49 acres into four parcels measuring 0.627 acre net (Parcel 1), 0.555 acre net (Parcel 2), 0.500 acre net (Parcel 3), 0.523 acre net (Parcel 4), and a Remainder Parcel measuring 0.501 acre net. The two existing single-family residential domains are located on Parcel 3 and the Reminder Parcel. No new structural modifications are proposed for the existing structures. Parcel 1, 2 and 4 will have a small amount of grading which is expected to be a balanced cut/fill operation. A site development plan can be seen in Figure 3 below.

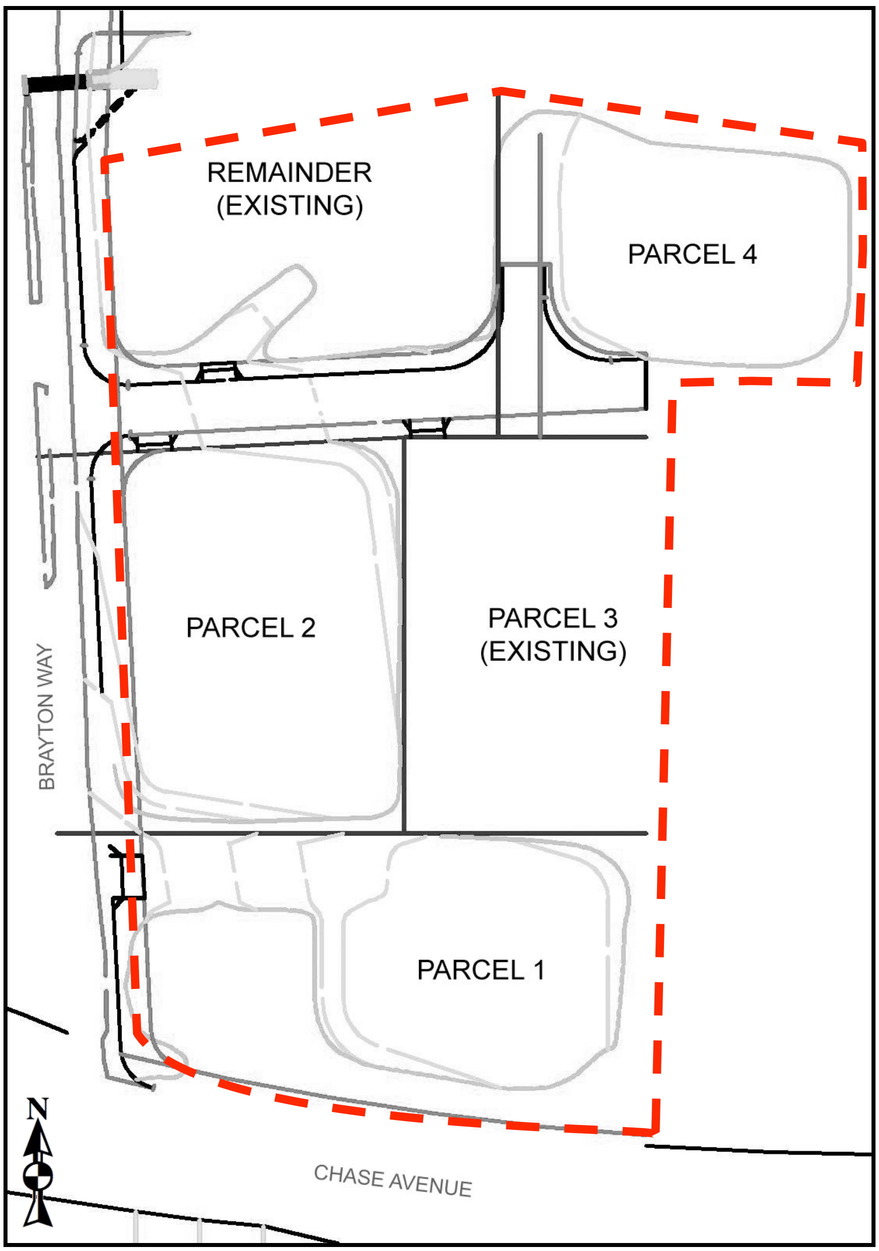

FIGURE 3: Proposed Site Plan (Snipes-Dye Associates, 2006)

Acoustical Definitions

Sound waves are linear mechanical waves. They can be propagated in solids, liquids, and gases. The material transmitting such a wave oscillates in the direction of propagation of the wave itself. Sound waves originate from some sort of vibrating surface. Whether this surface is the vibrating string of a violin or a person's vocal cords, a vibrating column of air from an organ or clarinet, or a vibrating panel from a loudspeaker, drum, or aircraft, the sound waves generated are all similar. All of these vibrating elements alternately compress the surrounding air during forward motion and expand it on the backward movement.

There is a large range of frequencies within which linear waves can be generated, sound waves being confined to the frequency range that can stimulate the auditory organs to the sensation of hearing. For humans this range is from about 20 Hertz (Hz or cycles per second) to about 20,000 Hz. The air transmits these frequency disturbances outward from the source of the wave. Sound waves, if unimpeded, will spread out in all directions from a source. Upon entering the auditory organs, these waves produce the sensation of sound. Waveforms that are approximately periodic or consist of a small number of periodic components can give rise to a pleasant sensation (assuming the intensity is not too high), for example, as in a musical composition. Noise, on the other hand, can be represented as a superposition of periodic waves with a large number of components.

Noise is generally defined as unwanted or annoying sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, and the sensitivity of the individual hearing the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric levels. The loudest sounds that the human ear can hear comfortably are approximately one trillion (or 1×10^{12}) times the acoustic energy that the ear can barely detect. Because of this vast range, any attempt to represent the acoustic intensity of a particular sound on a linear scale becomes unwieldy. As a result, a logarithmic ratio originally conceived for radio work known as the decibel (dB) is commonly employed.

A sound level of zero “0” dB is scaled such that it is defined as the threshold of human hearing and would be barely audible to a human of normal hearing under extremely quiet listening conditions. Such conditions can only be generated in anechoic or “dead rooms”. Typically, the quietest environmental conditions (extreme rural areas with extensive shielding) yield sound levels of approximately 20 dB. Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB roughly correspond to the threshold of pain and would be associated with sources such as jet engine noise or pneumatic equipment.

The minimum change in sound level that the human ear can detect is approximately 3 dB. A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sounds loudness. A change in sound level of 10 dB actually represents an approximate 90 percent change in the sound intensity, but only about a 50 percent change in the perceived loudness. This is due to the nonlinear response of the human ear to sound.

As mentioned above, most of the sounds we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The intensities of each frequency add to generate the sound we hear. The method commonly used to quantify environmental sounds consists of determining all of the frequencies of a sound according to a weighting system that reflects the nonlinear response characteristics of the human ear. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (or dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the Leq (or equivalent sound level) is used. Leq is the energy-mean A-weighted sound level during a measured time interval. It is the 'equivalent' constant sound level that would have to be produced by a given source to equal the average of the fluctuating level measured. For most acoustical studies, the study interval is generally taken as one-hour and is abbreviated *Leq-h*; however, other time intervals are utilized depending on the jurisdictional preference.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. They are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of a stated time. Sound levels associated with the L10 typically describe transient or short-term events, while levels associated with the L90 describe the steady state (or most prevalent) noise conditions. In addition, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum and minimum measured sound level (Lmax and Lmin) indicators. The Lmin value obtained for a particular monitoring location is often called the *acoustic floor* for that location.

Another sound measure employed by the State of California and the County of San Diego is known as the Community Noise Equivalence Level (CNEL) is defined as the "A" weighted average sound level for a 24-hour day. It is calculated by adding a 5-decibel penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.), and a 10-decibel penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours.

APPLICABLE SIGNIFICANCE CRITERIA

County of San Diego Noise Regulations

Transportation noise levels in the County of San Diego are governed under the Noise Element of the County's General Plan. The relevant sections of the Noise Element are cited below. Exterior noise standards are typically applied to areas within a proposed development that would be classified as "usable exterior space", such as rear and some side yards.

1. Whenever possible, development in San Diego County should be planned and constructed so that noise sensitive areas are not subject to noise levels in excess if 55 dBA CNEL.
2. Whenever it appears that new development will result in any (existing or future) noise sensitive areas being subjected to noise levels in excess of 60 dBA CNEL or greater, an acoustical study should be required.
3. If the acoustical study shows that noise levels at any noise sensitive areas will exceed 60 dBA CNEL, the development should not be approved unless the following findings are made:
   a) Modifications to the development have been or will be made which reduce the exterior noise level below 60 dBA CNEL; or,
   b) If, with the current noise abatement technology, it is infeasible to reduce the exterior CNEL to 60 dBA, then modifications to the development will be made which reduce interior noise below a CNEL equal to 45 dBA. Particular attention shall be given to noise sensitive interior spaces such as bedrooms; and,
   c) If finding 'b' above is made, a further finding will be made that there are specifically identified overriding social or economic considerations which warrant approval of the development without modifications as described in 'a' above.

4) If the acoustical study shows that the noise levels at any noise sensitive areas will exceed 75 dBA CNEL; the development should not be approved.
5) Interior noise levels should not exceed 45 dBA CNEL within any habitable living space of any residential unit.

State of California CCR Title 24

The California Code of Regulations (CCR), Title 24, Noise Insulation Standards, states that multi-family dwellings, hotels, and motels located where the CNEL exceeds 60 dBA, must obtain an acoustical analysis showing that the proposed design will limit interior noise to less than 45 dBA CNEL. Interior noise standards are typically applied to sensitive areas within the structure where low noise levels are desirable (such as living rooms, dining rooms, bedrooms, and dens or studies).

Worst-case noise levels, either existing or future, must be used for this determination. Future noise levels must be predicted at least ten years from the time of building permit application. The County of San Diego has adopted the CCR Title 24 standards, although for the purposes of environmental analysis, utilizes the interior threshold (above) from the Noise Element of the General Plan. Thus, for the purposes of analysis, the applicable exterior noise design threshold is 60 dBA CNEL. The applicable interior noise standard is 45 dBA CNEL.

ANALYSIS METHODOLOGY

Site Monitoring Procedure

One Quest Model 2900 ANSI Type 2 integrating sound level meter was used as the data collection device. The meter location (denoted as ML 1) was mounted to a tripod approximately five feet above the ground and was placed within the project boundaries. The meter was placed at the worst-case noise exposure location within project site. This was done in order to capture the existing noise levels within the proposed project site during normal afternoon traffic flow conditions. The monitoring locations are shown graphically in Figure 4 on the next page of this report.

The measurements were performed on March 21, 2006 starting at approximately 5:00 p.m. All equipment was calibrated before testing at ISE's acoustics and vibration laboratory to verify conformance with ANSI S1-4 1983 Type 2 and IEC 651 Type 2 standards.

Traffic Noise Impact Assessment Approach

The Caltrans Sound 32 Traffic Noise Prediction Model with California (CALVENO) noise emission factors (*based on FHWA RD-77-108 and FHWA/CA/TL-87/03 standards*) were used to calculate future onsite vehicular traffic noise levels. The Sound 32 model was calibrated in accordance with Appendix E of the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) for a normalized Level of Service of 'C'. This is also in accordance with Caltrans Technical Noise Supplement (TeNS) sections N-5440 & N-5460 published October 1998. Model input included:

- A digitized representation of all major roadways (i.e., Chase Avenue and State Highway 54 also know as Jamacha Road)
- Future Average Daily Trips (ADTs) for nearby major roadways (*Source: SANDAG 2030Traffic Forecast 3/06*)
- 90/6/4 (automobiles/medium/heavy vehicles) traffic mix
- Receptor elevations
- Topography as identified in the project site plans (*Source: Snipes-Dye Associates, 2006*)

Receptor elevations were considered five feet above the appropriate floor (pad) elevation and were taken near the center of each proposed lot. Second floor receptor areas were modeled at 15 feet above the respective pad elevation. The receptor locations can be seen in Figure 5 on Page 10 of this report.

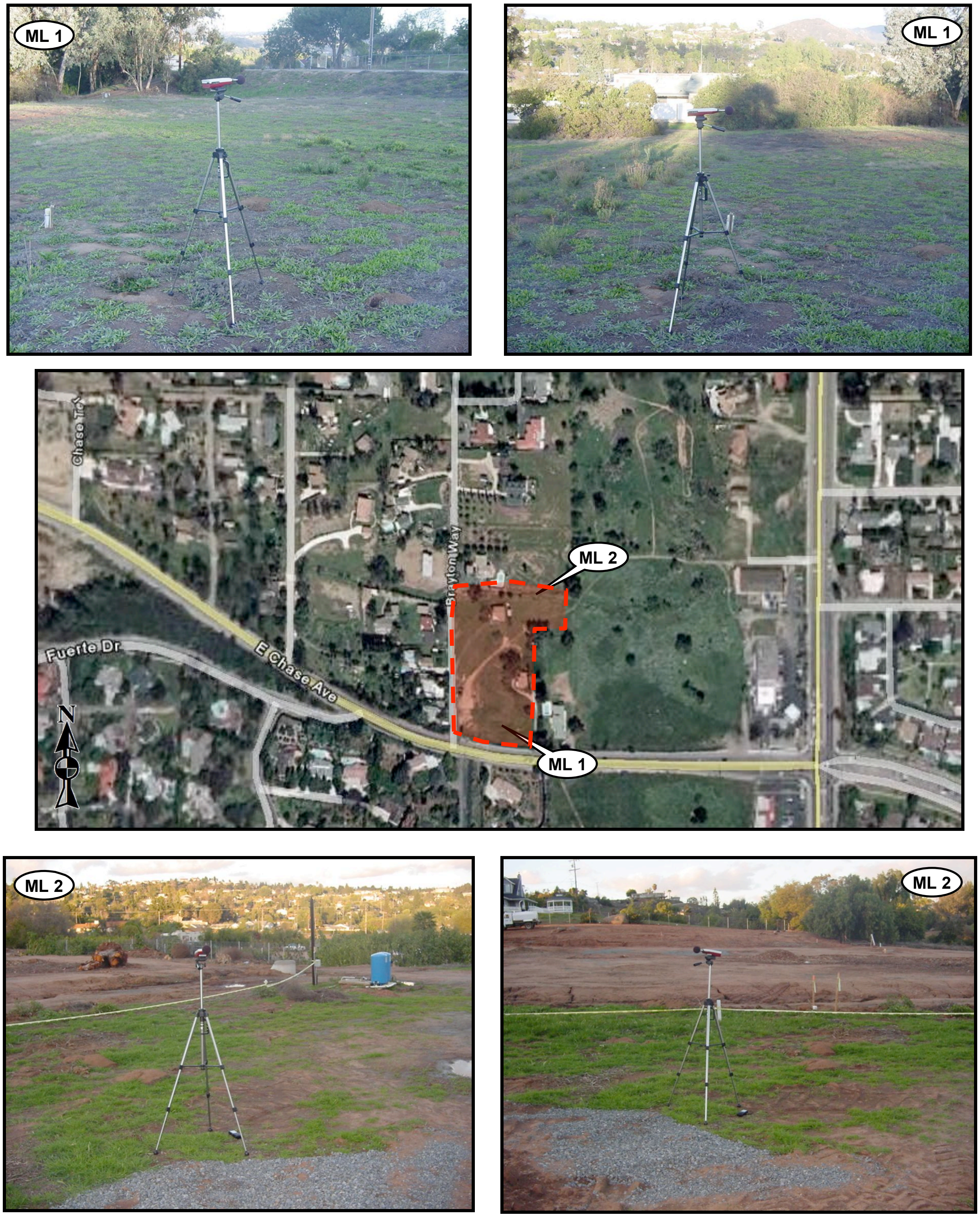

FIGURE 4: Ambient Noise Monitoring Locations (ISE, 3/06)

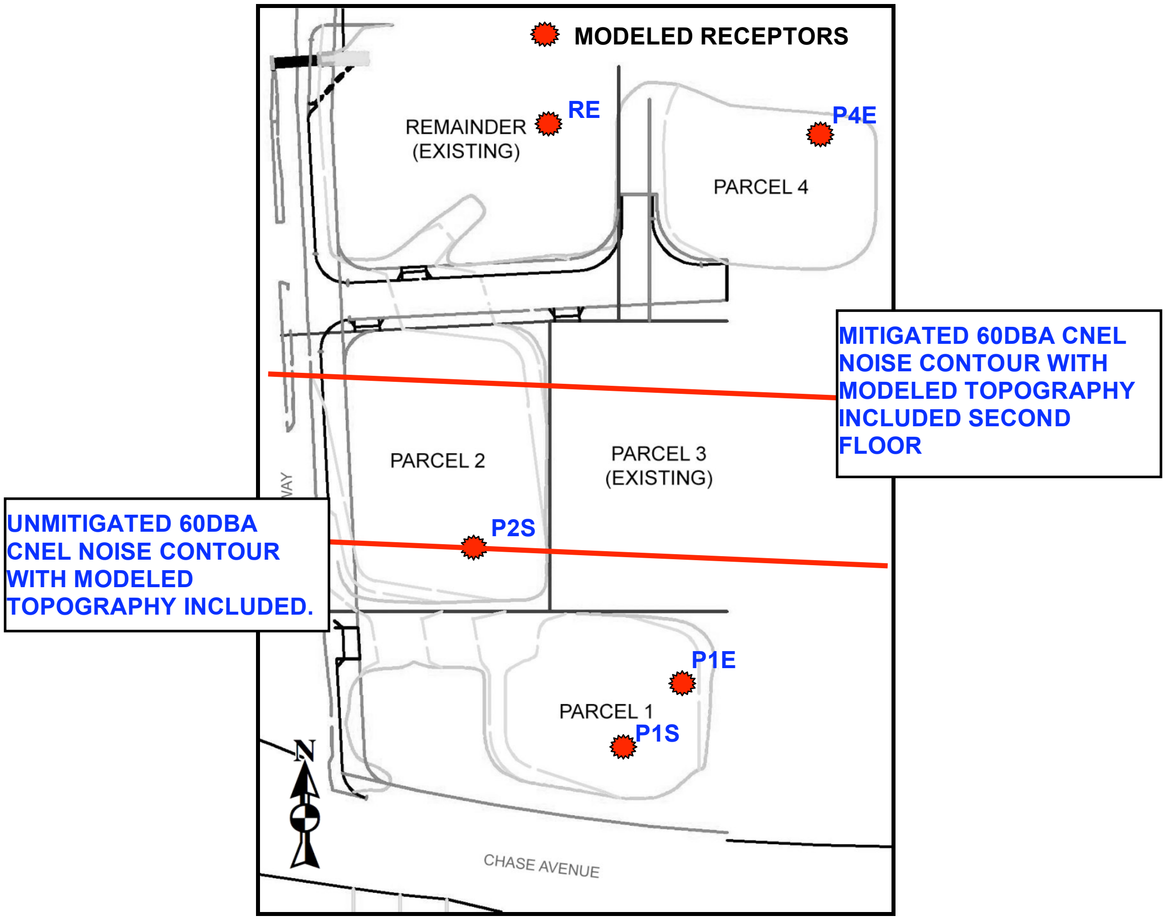

FIGURE 5: Modeled Receptor Locations (ISE, 3/06)

FINDINGS / RECOMMENDATIONS

Testing conditions during the monitoring period were mostly sunny with an average barometric pressure reading of 29.97 in-Hg, an average southwesterly wind speed of 7 to 8 miles per hour (MPH), and an approximate mean temperature of 70 degrees Fahrenheit. The results of the sound level monitoring are shown below in Table 1 below. The values for the equivalent sound level (Leq), the maximum and minimum measured sound levels (Lmax and Lmin), and the statistical indicators L10, L50, and L90, are given for each monitoring location.

Noise levels on site were found to be consistent with the observed community setting and topography. The value for the equivalent sound level (Leq-h) within the project site was found to range between approximately 52 and 62 dBA. Background noise levels (i.e., L90 levels) were found to be lower than the energy equivalent counterpart (e.g., Leq-h) indicating the cyclical traffic patterns along Chase Avenue. The acoustic floor for the site, as indicated by the Lmin metric, was found to be approximately 47 dBA.

TABLE 1: Measured Ambient Sound Levels – TPM 20991 Site Development

		1-Hour Noise Level Descriptors in dBA					
Site	**Start Time**	**Leq**	**Lmax**	**Lmin**	**L10**	**L50**	**L90**
ML 1	5:05 p.m.	62.0	76.3	46.9	64.8	60.9	55.1
ML 2	5:30 p.m.	52.0	61.9	46.2	54.2	51.2	49.0

Monitoring Locations:

- ML 1: Southern portion of the project within proposed Parcel 1 - GPS N32° 46.159 x W116° 55.879. Meter located approximately 75 feet from roadway center.
- ML 2: Northern portion of the project within proposed Parcel 4 - GPS N32° 46.216 x W116° 55.847. Meter located approximately 500 feet from roadway center.

Measurements performed by ISE on March 21, 2006. Estimated Position Error (EPE) = 16 feet.

Future Traffic Noise Impacts

The primary source of future noise near the project site would be from traffic along the various adjacent servicing roadways. Table 2 below references peak hour traffic volumes from Chase Ave. and SR-54 (Jamacha Road) (*Source: SANDAG 2030 Series 10 Traffic Forecast 3/06).* It should be noted that SR-54 is not expected to be expanded. SANDAG does not predict this expansion into 2030. Also there are no proposed engineering plans to support this expansion.

Peak hour traffic values are calculated for a 90/6/4 (automobiles/medium/heavy vehicles) percent mix in accordance with City and Caltrans traffic forecasting practices and the observed traffic distribution for a major road. Model output consisted of peak hour energy-mean A-weighted sound levels (or Leq-h) for each receptor examined. For peak hour traffic percentages between approximately 8 and 12 percent, the energy-mean A-weighted sound level is equivalent to the Community Noise Equivalent Level (CNEL). Outside this range, a maximum variance of up to two dBA occurs between Leq-h and CNEL.

The unmitigated acoustical modeling results for selected lot sampling receptor locations within the proposed development are shown in Table 3 below. The acoustical model results are provided as an attachment to this report. Based upon our findings, the only acoustical impacts found would be within Parcel 1.

TABLE 2: Future Traffic Predictions – TPM 20991 Residential Development

Roadway Segment	Peak Hour Traffic Volume (Vehicles)	Projected Traffic Speed (MPH)
Chase Ave. (East of Fuerte Dr.)	18,000	45
Jamacha Rd. (South of Maryann Way)	31,000	50

Source: Future Peak Hour Traffic Volumes – SANDAG 2030 Series 10, 3/06.

Mitigation is required to reduce Parcel 1's exterior CNEL to meet the County of San Diego's exterior 60 dBA CNEL Threshold. A proposed mitigation plan consisting of one wall, which slopes from One-Feet to Twelve-Feet along the southern property line, was found to effectively mitigate noise levels to 60 dBA CNEL. The recommended placement of this barrier along with the corresponding Bottom of Wall elevation (BOW) and Top of Wall elevation (TOW) is shown in Figure 6 on page 13 of this report. The barrier should be of solid construction (i.e., such as earthen berm, masonry block or glass or any combination). The County recommends that the noise barrier have a minimum surface density of 3.5 lbs per square footprint (thickness should be determined by the project engineer). The mitigated acoustical model results are listed in Table 3 below.

TABLE 3: Acoustical Modeling Results – TM 20991 Residential Development

	Unmitigated	Mitigated	
Receptor #	Ground Level	Ground Level	Second Level
P1E	61	60	66
P1S	68	59	69
P2S	60	60	62
P4E	57	56	57
RE	57	56	56

Finally, all building façade areas (as shown above in Table 3 with levels above 60 dBA CNEL) within the proposed development would exceed the CCR Title 24 noise abatement threshold due to future traffic activity along adjacent roadways. Interior noise mitigation (i.e., specialized door and window treatments) would be required for all unit areas identified.

Prior to issuance of building permits for the proposed project, an interior noise analysis compliant with the California Code of Regulations (CCR), Title 24, Noise Insulation Standards would be required. The acoustical analysis should demonstrate that the proposed architectural design would limit interior noise to 45 dBA CNEL or less. Worst-case noise levels, either existing or future, must be used for this determination.

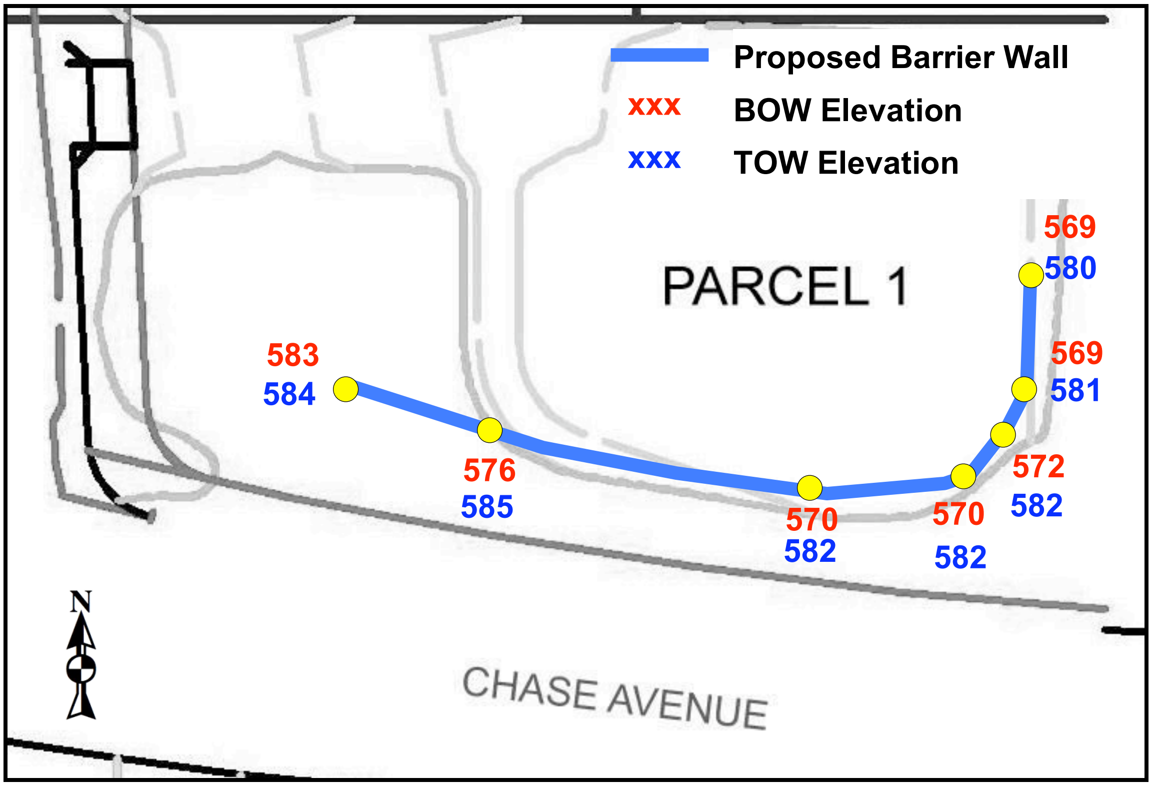

FIGURE 6: Proposed Noise Barrier Wall and Wall Elevation (ISE, 3/06)

Should you have any questions regarding the above conclusions, please do not hesitate to contact me at (858) 451-3505.

Sincerely,

Rick Tavares

Rick Tavares, Ph.D.
Project Principal
Investigative Science and Engineering, Inc.

Cc: Ryan Taylor, ISE

Attachments: Sound32 Model Input/Output Decks

S32 INPUT DECK – UNMITIGATED GROUND FLOOR

```
TPM 20991 UNMITIGATED GROUND FLOOR
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 1620 , 50 , 108 , 50 , 72 , 50
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2790 , 50 , 186 , 50 , 124 , 50
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N,319,264,585,
N,227,288,590,
L-JAMACHA ROAD, 2
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N,1460,846,539.5,
B-ROADWAY EDGE, 1 , 1 , 0 ,0
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R, 5 , 65 ,10
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C,C
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S32 OUTPUT DECK – UNMITIGATED GROUND FLOOR

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SOUND32 - RELEASE 07/30/91

 TITLE: TPM 20991 UNMITIGATED GROUND FLOOR

          BARRIER DATA
          ************

 BAR               BARRIER HEIGHTS               BAR
 ELE    0    1    2    3    4    5    6    7    ID        LENGTH  TYPE
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  2     -    0.*                               B1 P2      114.2  BERM
  3     -    0.*                               B1 P3      158.6  BERM
  4     -    0.*                               B1 P4       99.4  BERM
  5     -    0.*                               B1 P5       23.8  BERM
  6     -    0.*                               B1 P6      173.5  BERM
  7     -    0.*                               B1 P7       36.7  BERM
  8     -    0.*                               B1 P8       71.0  BERM
  9     -    0.*                               B1 P9      156.2  BERM

 10     -    0.*                               B2 P1      139.2  BERM

 11     -    0.*                               B3 P1       99.7  BERM
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 13     -    0.*                               B3 P3       12.1  BERM
 14     -    0.*                               B3 P4       77.1  BERM
 15     -    0.*                               B3 P5       10.0  BERM
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 17     -    0.*                               B3 P7       32.4  BERM
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 19     -    0.*                               B3 P9       73.1  BERM

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 21     -    0.*                               B4 P2       77.4  BERM
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 33     -    0.*                               B6 P2      576.2  BERM

 34     -    0.*                               B7 P1       51.3  BERM
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 37     -   0.*                                   B7 P4       46.7  BERM
 38     -   0.*                                   B7 P5       36.1  BERM
 ------------------------------------------------------------------------------
        0    1    2    3    4    5    6    7

REC REC ID    DNL  PEOPLE   LEQ(CAL)
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  1  P1E       65.     10.   61.0
  2  PIS       65.     10.   68.3
  3  P2S       65.     10.   60.3
  4  P4E       65.     10.   56.9
  5  RE        65.     10.   56.9
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S32 INPUT DECK – MITIGATED GROUND FLOOR

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TPM 20991 MITIGATED GROUND FLOOR
T-PEAK HOUR TRAFFIC CONDITIONS, 1
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292.,312,589,589,
268.,339,590,590,
R, 1 , 65 ,10
500,358,574.5,P1E
R, 2 , 65 ,10
457,312,574.5,P1S
R, 3 , 65 ,10
359,447,578,P2S
R, 4 , 65 ,10
615,707,560,P4E
R, 5 , 65 ,10
445,726,563,RE
C,C
```

S32 OUTPUT DECK – MITIGATED GROUND FLOOR

```
SOUND32 - RELEASE 07/30/91

 TITLE: TPM 20991 MITIGATED GROUND FLOOR

          BARRIER DATA
          ************

 BAR             BARRIER HEIGHTS               BAR
 ELE    0    1    2    3    4    5    6    7    ID        LENGTH  TYPE
 ---------------------------------------------------------------------------------
  1     -   0.*                               B1 P1      179.4  BERM
  2     -   0.*                               B1 P2      114.2  BERM
  3     -   0.*                               B1 P3      158.6  BERM
  4     -   0.*                               B1 P4       99.4  BERM
  5     -   0.*                               B1 P5       23.8  BERM
  6     -   0.*                               B1 P6      173.5  BERM
  7     -   0.*                               B1 P7       36.7  BERM
  8     -   0.*                               B1 P8       71.0  BERM
  9     -   0.*                               B1 P9      156.2  BERM
```

```
 10     -   0.*                               B2 P1      139.2  BERM

 11     -   0.*                               B3 P1       99.7  BERM
 12     -   0.*                               B3 P2       58.3  BERM
 13     -   0.*                               B3 P3       12.1  BERM
 14     -   0.*                               B3 P4       77.1  BERM
 15     -   0.*                               B3 P5       10.0  BERM
 16     -   0.*                               B3 P6       34.1  BERM
 17     -   0.*                               B3 P7       32.4  BERM
 18     -   0.*                               B3 P8       47.0  BERM
 19     -   0.*                               B3 P9       73.1  BERM

 20     -   0.*                               B4 P1       33.0  BERM
 21     -   0.*                               B4 P2       77.4  BERM
 22     -   0.*                               B4 P3       30.3  BERM
 23     -   0.*                               B4 P4       22.8  BERM
 24     -   0.*                               B4 P5      113.6  BERM
 25     -   0.*                               B4 P6       16.4  BERM
 26     -   0.*                               B4 P7      150.5  BERM
 27     -   0.*                               B4 P8       87.7  BERM

 28     -   0.*                               B5 P1       73.1  BERM
 29     -   0.*                               B5 P2       22.4  BERM
 30     -   0.*                               B5 P3       58.0  BERM
 31     -   0.*                               B5 P4       76.9  BERM

 32     -   0.*                               B6 P1       56.0  BERM
 33     -   0.*                               B6 P2      576.2  BERM

 34     -   5.*                               B7 P1       50.7  MASONRY
 35     -  11.*                               B7 P2       63.0  MASONRY
 36     -  12.*                               B7 P3       32.2  MASONRY
 37     -  12.*                               B7 P4       20.8  MASONRY
 38     -  12.*                               B7 P5       16.6  MASONRY
 39     -  12.*                               B7 P6       54.0  MASONRY

 40     -  15.*                               B8 P1      107.0  MASONRY
 41     -  15.*                               B8 P2       26.0  MASONRY
 42     -  15.*                               B8 P3      107.6  MASONRY
 43     -  15.*                               B8 P4       36.0  MASONRY

 44     -   0.*                               B9 P1       51.3  BERM
 45     -   0.*                               B9 P2       93.0  BERM
 46     -   0.*                               B9 P3       65.0  BERM
 47     -   0.*                               B9 P4       46.7  BERM
 48     -   0.*                               B9 P5       36.1  BERM
 ------------------------------------------------------------------------------
        0    1    2    3    4    5    6    7

REC REC ID    DNL  PEOPLE   LEQ(CAL)
 --------------------------------
  1  P1E       65.     10.   60.3
  2  P1S       65.     10.   59.0
  3  P2S       65.     10.   60.4
  4  P4E       65.     10.   56.3
  5  RE        65.     10.   56.0
 --------------------------------
```

S32 INPUT DECK – MITIGATED SECOND FLOOR

```
TPM 20991 MITIGATED SECOND FLOOR
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 1620 , 50 , 108 , 50 , 72 , 50
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2790 , 50 , 186 , 50 , 124 , 50
L-CHASE AVENUE, 1
```

```
N,818,220,555,
N,401,248,580,
N,319,264,585,
N,227,288,590,
L-JAMACHA ROAD, 2
N,1459,223,527.5,
N,1460,846,539.5,
B-ROADWAY EDGE, 1 , 1 , 0 ,0
841,247,553,553,
662,253,564,564,
548,252,570,570,
391,272,580,580,
294,293,586,586,
283,314,588,588,
273,487,580,580,
272,523,573,573,
270,594,574,574,
263,750,571,571,
B-ROADWAY EDGE, 2 , 1 , 0 ,0
263,750,571,571,
271,889,571,571,
B-PARCEL 1 SLOPE TOPO, 3 , 1 , 0 ,0
282,378,588,588,
381,373,577,577,
387,315,577,577,
395,306,576,576,
470,289,570,570,
480,289,569,569,
509,307,569,569,
514,339,569,569,
512,386,569,569,
443,410,569,569,
B-PARCEL 2 SLOPE TOPO, 4 , 1 , 0 ,0
281,585,573,573,
281,552,574,574,
286,475,580,580,
288,445,584,584,
297,424,584,584,
410,419,573,573,
423,429,572,572,
402,578,572,572,
316,595,572,572,
B-PARCEL 4 SLOPE TOPO, 5 , 1 , 0 ,0
547,649,554,554,
620,645,554,554,
630,665,554,554,
631,723,554,554,
556,740,554,554,
B-ROADWAY EDGE JAMACHA, 6 , 1 , 0 ,0
1398.,244,527,527,
1416.,297,528,528,
1409.,873,540,540,
B-BARRIER 1 PAD 1, 7 , 2 , 0 ,0
345.,315,582,583,
395.,307,576,585,
457.,296,570,582,
489.,292,570,582,
506.,304,570,582,
513.,319,569,581,
513.,373,569,580,
B-EXISTING STRUCTURE TO REMAIN, 8 , 2 , 0 ,0
621.,410,558,573,
622.,303,558,573,
596.,304,558,573,
585.,411,558,573,
621.,410,558,573,
```

```
B-EARTH TOPO, 9 , 1 , 0 ,0
540.,262,570,570,
489.,264,575,575,
397.,277,580,580,
334.,292,585,585,
292.,312,589,589,
268.,339,590,590,
R, 1 , 65 ,10
500,358,584.5,P1E
R, 2 , 65 ,10
457,312,584.5,P1S
R, 3 , 65 ,10
359,447,588,P2S
R, 4 , 65 ,10
615,707,570,P4E
R, 5 , 65 ,10
445,726,573,RE
C,C
```

S32 OUTPUT DECK – MITIGATED SECOND FLOOR

```
SOUND32 - RELEASE 07/30/91

 TITLE: TPM 20991 MITIGATED SECOND FLOOR

          BARRIER DATA
          ************

 BAR               BARRIER HEIGHTS              BAR
 ELE    0    1    2    3    4    5    6    7    ID         LENGTH  TYPE
 ------------------------------------------------------------------------------
  1     -   0.*                                B1 P1      179.4  BERM
  2     -   0.*                                B1 P2      114.2  BERM
  3     -   0.*                                B1 P3      158.6  BERM
  4     -   0.*                                B1 P4       99.4  BERM
  5     -   0.*                                B1 P5       23.8  BERM
  6     -   0.*                                B1 P6      173.5  BERM
  7     -   0.*                                B1 P7       36.7  BERM
  8     -   0.*                                B1 P8       71.0  BERM
  9     -   0.*                                B1 P9      156.2  BERM

 10     -   0.*                                B2 P1      139.2  BERM

 11     -   0.*                                B3 P1       99.7  BERM
 12     -   0.*                                B3 P2       58.3  BERM
 13     -   0.*                                B3 P3       12.1  BERM
 14     -   0.*                                B3 P4       77.1  BERM
 15     -   0.*                                B3 P5       10.0  BERM
 16     -   0.*                                B3 P6       34.1  BERM
 17     -   0.*                                B3 P7       32.4  BERM
 18     -   0.*                                B3 P8       47.0  BERM
 19     -   0.*                                B3 P9       73.1  BERM

 20     -   0.*                                B4 P1       33.0  BERM
 21     -   0.*                                B4 P2       77.4  BERM
 22     -   0.*                                B4 P3       30.3  BERM
 23     -   0.*                                B4 P4       22.8  BERM
 24     -   0.*                                B4 P5      113.6  BERM
 25     -   0.*                                B4 P6       16.4  BERM
 26     -   0.*                                B4 P7      150.5  BERM
 27     -   0.*                                B4 P8       87.7  BERM

 28     -   0.*                                B5 P1       73.1  BERM
 29     -   0.*                                B5 P2       22.4  BERM
 30     -   0.*                                B5 P3       58.0  BERM
```

```
 31     -   0.*                              B5 P4       76.9  BERM

 32     -   0.*                              B6 P1       56.0  BERM
 33     -   0.*                              B6 P2      576.2  BERM

 34     -   5.*                              B7 P1       50.7  MASONRY
 35     -  11.*                              B7 P2       63.0  MASONRY
 36     -  12.*                              B7 P3       32.2  MASONRY
 37     -  12.*                              B7 P4       20.8  MASONRY
 38     -  12.*                              B7 P5       16.6  MASONRY
 39     -  12.*                              B7 P6       54.0  MASONRY

 40     -  15.*                              B8 P1      107.0  MASONRY
 41     -  15.*                              B8 P2       26.0  MASONRY
 42     -  15.*                              B8 P3      107.6  MASONRY
 43     -  15.*                              B8 P4       36.0  MASONRY

 44     -   0.*                              B9 P1       51.3  BERM
 45     -   0.*                              B9 P2       93.0  BERM
 46     -   0.*                              B9 P3       65.0  BERM
 47     -   0.*                              B9 P4       46.7  BERM
 48     -   0.*                              B9 P5       36.1  BERM
 -------------------------------------------------------------------------------
        0    1    2    3    4    5    6    7

REC REC ID    DNL  PEOPLE   LEQ(CAL)
 --------------------------------
  1  P1E       65.     10.   66.0
  2  P1S       65.     10.   69.0
  3  P2S       65.     10.   62.4
  4  P4E       65.     10.   57.1
  5  RE        65.     10.   55.5
 --------------------------------
```